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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,653	04/16/2004	Garth Shoemaker	198821-368252	8479

27155 7590 10/01/2008

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EXAMINER	
BRIER, JEFFERY A	

ART UNIT	PAPER NUMBER
2628	

MAIL DATE	DELIVERY MODE
10/01/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/825,653	SHOEMAKER, GARTH	
	Examiner	Art Unit	
	Jeffery A. Brier	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32 and 35-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32 and 35-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Examiner in charge of this application has been changed to Primary Examiner Jeffery A. Brier.

Response to Pre-Appeal Brief Conference Request

2. The pre-appeal conference reopened prosecution of this application.

3. This action is responding to the claims amended on 11/26/2007.

Response to Amendment

4. The amendment filed on 11/26/2007 has been entered.

Response to Arguments

5. Applicant's arguments filed 06/19/2008 have been fully considered and are deemed to be persuasive with regard to the current claim language.

6. In summary applicants originally filed specification describe and convey A while the prior art applied in the office action mailed on 03/25/22008 teaches or renders obvious most of A, while applicant argues in the pre-appeal brief appeal conference request filed on 06/19/2008 the claims claim B, however, applicants originally filed specification, claims, and drawings do not convey B.

Drawings

7. The previous drawing objection set forth in the office action mailed on 03/25/22008 before paragraph 1 is withdrawn, however, the following drawing objection applies to the drawings filed on 04/16/2004.

8. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in

compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

9. The previous specification objections set forth in the office action mailed on 03/25/22008 at paragraphs 1 and 2 are withdrawn

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 1-32 and 35-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-31:

A) The original image is defined to be a two-dimensional image or three-dimensional image. Applicants 11/26/2007 amended claims claim "wherein the signal indicates ... a depth in the original image" (claim 1 at lines 4-5, claim 12 at lines 4-5) or

"wherein the at least one parameter...a depth in the original image" (claim 23 at line 9) applicant is claiming depth in a two-dimensional image. Note dependent claims 8, 19, 28, and 37. Applicants originally filed specification, claims, and drawings do not convey applicant had possession of indicating a depth in a two-dimensional image. Similarly applicants originally filed specification, claims, and drawings do not convey that applicant had possession of the 11/26/2007 amended language "wherein the distorted region is positioned ...at the depth in the original image indicated by the signal" (claim 1 at lines 8-9, claim 12 at lines 9-10, claim 23 at lines 13-14). The original image is illustrated in figure 2 as being on basal plane 210 where a lens 230 distorts the image with magnification 233 and compression 234. A depth “in the original image” is not shown by basal plane 210. Note the following sections of the originally filed specification and claims. (emphasis added by underling)

[0025] Preferably, the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

[0036] Preferably, the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

[0045] Preferably, the signal includes a depth for the distortion function proportional to a focal depth for the user measured by the eye tracking device.

[0054] Preferably, the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

[0105] The method described above for use in desktop and large screen environments can be extended to use in immersive virtual reality environments. In this case, instead of the eye tracking device 351 determining the point-of-interest on the screen through eye tracking, it determines the direction of gaze through a virtual environment. This can be used to position and manipulate lenses. Furthermore, the use of an eye tracking device 351 that can detect focal depth (i.e., through the tracking of both eyes of a user) can be used to position a lens 410 at a depth defined by the focal depth.

[0116] At step 502, a signal is received from a user through a position tracking device 352 coupled to the computer system 300 to initiate the generation of the presentation. The original image may include a two-dimensional image and a three-dimensional model. The position tracking device 352 may be an eye tracking device 351. The signal may include a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device 351. And, the screen 340 may include a remote screen coupled to the computer system 300 by a network.

10. The method of claim 3 wherein the position tracking device is an eye tracking device and wherein the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

21. The method of claim 14 wherein the position tracking device is an eye tracking device and wherein the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

30. The method of claim 24 wherein the position tracking device is an eye tracking device and wherein the signal includes a depth for the distortion function proportional to a focal depth for the user measured by the eye tracking device.

39. The method of claim 34 wherein the position tracking device is an eye tracking device and wherein the signal includes a depth for the lens surface within the original image proportional to a focal depth for the user measured by the eye tracking device.

B) The originally filed specification, claims, and drawings do not convey "a depth in the original image" for three-dimensional images because the originally filed specification, claims, and drawings conveys "within the original image" to be within the surface region of the original image (surface of the basal plane) rather than into the original image (basal plane) for several reasons one of which is the originally filed specification, claims, and drawings does not describe a method to drill down into a three-dimensional image while maintaining the "at least partially compressed region" (claim 1 at line 12, claim 12 at lines 12-13, claim 23 at line 17). Note dependent claims 8, 19, 28, and 37. The original image is illustrated in figure 2 as being on basal plane

210 where a lens 230 distorts the image with magnification 233 and compression 234.

A depth “in the original image” is not shown by basal plane 210. Note the above

sections of the originally filed specification and claims and the following section.

(emphasis added by underling)

[0101] Now, according to the present invention, a method is provided for controlling detail-in-context lens through eye and position tracking. As mentioned, detail-in-context viewing is a technique applicable to 2D or 3D data that allows for data to be magnified locally while maintaining data continuity. In two dimensions, an arbitrarily shaped region of interest is magnified in place within the data, while a surrounding band of variable magnification connects the region of interest with the surrounding image. The magnified region is referred to as the focal region 420, the surrounding band of variable magnification is referred to as the shoulder region 430, and the surrounding image is referred to as the "base image" (i.e., the region beyond the base 412). The focal region 420 and shoulder region 430 together comprise the lens 410. When applied to 3D data, the lens concept itself can be extended into three dimensions. The lens 410 typically takes the form of a cylinder (although it can take on other forms) of magnification that extends from the viewpoint 240 through the region-of-interest 233 in the data. The cylinder of magnification can be of finite or infinite depth. The magnification cylinder can act on the data by magnifying objects, displacing objects, or deforming individual objects. In either 2D or 3D, it is desirable to have a method of positioning and manipulating the lens 410. Such parameters as lens position, lens size, and lens magnification may need to be adjusted by the user. The present invention allows a user to manipulate lens parameters 450, 412, 411, 421, 481, 482, 491, 440, 495 through the use of eye tracking and/or position tracking devices 351, 352 and technology.

[0110] Similarly, consider a user in an immersive virtual reality environment who is observing a 3D model floating within reach. When the user reaches out and "touches" a finger to the model at a region-of-interest, a 3D lens can be inserted in the model at the point touched by the user, oriented towards the user's point of view 240. Thus, a viewer-aligned direction for the perspective projection 231 corresponding to the lens 230 is selected.

Note: If applicant amends these claims to conform to figures 1 and 2 then applicant will

be claiming applicants admitted prior art.

Claims 32 and 35-40:

A) The originally filed specification, claims, and drawings do not convey "elevation" (claim 32 at lines 16 and 17).

B) The originally filed specification, claims, and drawings do not convey "wherein the signal includes ... a direction for the projection onto the plane" (claim 32 at lines 18-19). Note the following sections of the originally filed specification and claims. (emphasis added by underling)

[0020] Preferably, the signal includes a direction for a perspective projection for the lens surface.

[0031] Preferably, the signal includes an adjusted direction for a perspective projection for the lens surface.
[0040] Preferably, the at least one parameter includes a direction for a perspective projection for the distortion function.

[0047] According to another aspect of the invention, there is provided a method for generating a detail-in-context presentation for an original image for display on a screen of a computer system. The method includes the steps of: receiving a signal from a user through a position tracking device coupled to the computer system to initiate the generation of the presentation; and, distorting the original image to produce the presentation, the presentation having a distorted region to provide the user with detailed information for a region of the original image; wherein the signal includes a location for the distorted region within the original image and a direction for a perspective projection for the distorted region.

[0070] FIG. 2 is a graphical representation 200 of the geometry of a presentation in accordance with known EPS graphics technology. EPS graphics technology employs viewer-aligned perspective projections to produce detail-in-context presentations in a reference view plane 201 which may be viewed on a display. Undistorted 2D data points are located in a basal plane 210 of a 3D perspective viewing volume or frustum 220 which is defined by extreme rays 221 and 222 and the basal plane 210. The VP 240 is generally located above the centre point of the basal plane 210 and reference view plane ("RVP") 201. Points in the basal plane 210 are displaced upward onto a distorted

surface 230 which is defined by a general 3D distortion function (i.e., a detail-in-context distortion basis function). The direction of the perspective projection corresponding to the distorted surface 230 is indicated by the line FPo-FP 231 drawn from a point FPo 232 in the basal plane 210 through the point FP 233 which corresponds to the focus or focal region or focal point of the distorted surface 230. Typically, the perspective projection has a direction 231 that is viewer-aligned (i.e., the points FPo 232, FP 233, and VP 240 are collinear).

[0109] Now consider a user who is examining a 3D model on a screen 340. Again, sensors associated with the position tracking device detect the position and orientation of the user's finger. When the user points at a location on the screen, a 3D lens is inserted in the data, originating from the tip of the finger, and progressing through the data in a direction determined by the finger's orientation. Thus, the direction of the perspective projection 231 corresponding to the lens 230 may be determined by the orientation of the user's finger (or other user controlled object tracked by the position tracking device 352).

[0110] Similarly, consider a user in an immersive virtual reality environment who is observing a 3D model floating within reach. When the user reaches out and "touches" a finger to the model at a region-of-interest, a 3D lens can be inserted in the model at the point touched by the user, oriented towards the user's point of view 240. Thus, a viewer-aligned direction for the perspective projection 231 corresponding to the lens 230 is selected.

[0117] At step 503, the original image is distorted to produce the presentation, the presentation having a distorted region 410 to provide the user with detailed information for a region of the original image. The step of distorting may include: establishing a lens surface 230 for the distorted region; and, transforming the original image by applying a distortion function defining the lens surface 230 to the original image. The step of transforming may include projecting the presentation onto a plane 201. The signal may include a location for the lens surface 410 within the original image and a direction for a perspective projection 231 for the lens surface 230. The step of establishing may further include displaying a graphical user interface ("GUI") 400 over the distorted region 410 for adjusting the lens surface 230 by the user with the position tracking device 352. And, the lens surface 230 may include a focal region 233, 420 and a shoulder region 234, 430 and the GUI 400 may include at least one of: a slide bar icon 440 for adjusting a magnification for the lens surface 230; a bounding rectangle icon 421 with at least one handle icon 481, 482 for adjusting a size and a shape for the focal region 420; a bounding rectangle icon 411 with at least one handle icon 491 for adjusting a size and a shape for the shoulder region 430; a move icon 460 for adjusting a location for the lens surface 230 within the original image; a pickup icon 450 for adjusting a location for the shoulder region 430 within the original image; and, a fold icon 470 for adjusting a location for the focal region 420 relative to the shoulder region 430.

5. The method of claim 3 wherein the signal includes a direction for a perspective projection for the lens surface.

16. The method of claim 14 wherein the signal includes an adjusted direction for a perspective projection for the lens surface.

25. The method of claim 24 wherein the at least one parameter includes a direction for a perspective projection for the distortion function.

32. A method for generating a detail-in-context presentation for an original image for display on a screen of a computer system, comprising: receiving a signal from a user through a position tracking device coupled to the computer system to initiate the generation of the presentation; and, distorting the original image to produce the presentation, the presentation having a distorted region to provide the user with detailed information for a region of the original image; wherein the signal includes a location for the distorted region within the original image and a direction for a perspective projection for the distorted region.

Note: If applicant amends these claims to conform to figures 1 and 2 then applicant will be claiming applicants admitted prior art.

Claim Objections

12. Claims 1-32 and 35-40 are objected to because of the following informalities:

Claims 1-11:

Claim 23 at lines 10-11 claims "for at least at portion" which should be "for at least a portion".

Claims 12-22:

Claim 12 at line 11 claims "for at least at portion" which should be "for at least a portion".

Claims 23-31:

Claim 23 at line 15 claims "for at least at portion" which should be "for at least a portion".

Claims 32 and 35-40:

Claim 32 at line 18 claims "for at least at portion" which should be "for at least a portion".

Appropriate correction is required.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A. Brier whose telephone number is (571) 272-7656. The examiner can normally be reached on M-F from 7:30 to 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (571) 272-7664. The fax phone Number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jeffery A. Brier/
Primary Examiner, Division 2628